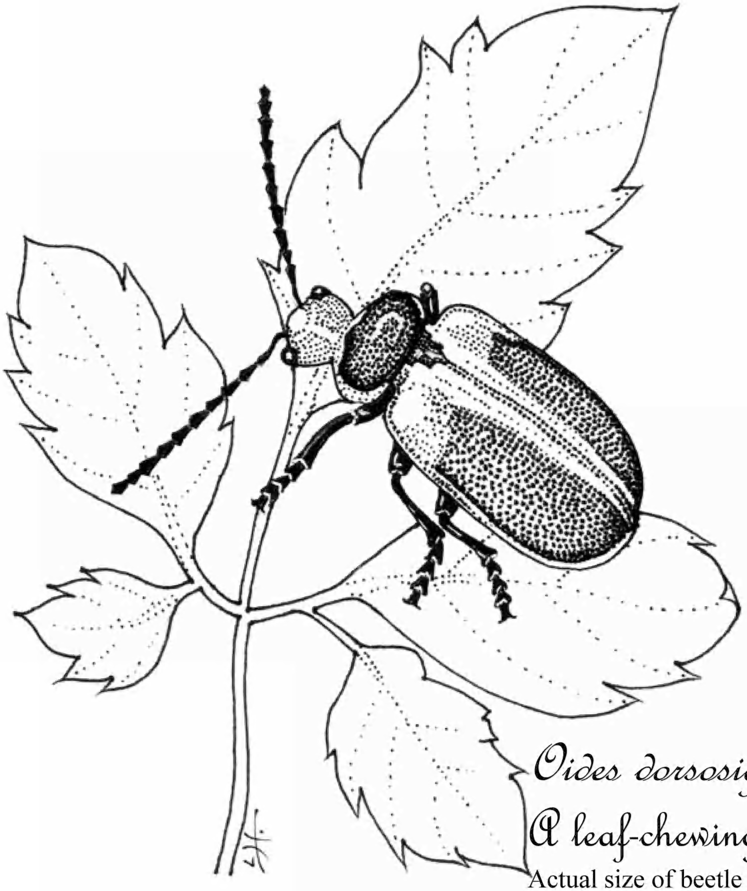

Oides dorsosignata

A leaf-chewing beetle

Actual size of beetle is 11mm

Butterfly & Other Invertebrates Club Inc. Newsletter

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http://www.connectqld.org.au/boic

CLUB PLANNING AND ORGANIZING GROUP - 2005

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Vice President:	John Moss	07 3245 2997
Treasurer:	Rob MacSloy	07 3824 4348
Secretary:	Peter Hendry	07 3206 0048
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Publicity:	Lois Hughes	07 3206 6229
Project Officer:	Frank Jordan	07 3844 6677

PLANNING AND ORGANIZATION MEETINGS

A quarterly meeting is scheduled in order to plan club activities and the newsletter. See BOIC Programme.

CONTACT ADDRESS AND MEMBERSHIP DETAILS

PO Box 2113, Runcorn, Queensland 4113
Membership fees are $15.00 for individuals and $20.00 for families, schools and organisations

AIMS OF ORGANIZATION

- To establish a network of people growing butterfly host plants;
- To hold information meetings about invertebrates;
- To organize excursions around the theme of invertebrates e.g. butterflies, native bees, ants, dragonflies, beetles, freshwater habitats, and others;
- To promote the conservation of the invertebrate habitat;
- To promote the keeping of invertebrates as alternative pets;
- To promote research into invertebrates;
- To encourage the construction of invertebrate friendly habitats in urban areas.

NEWSLETTER DEADLINES

If you want to submit an item for publication the following deadlines apply:
March issue – February 21st
June issue – May 21st
September issue – August 21st
December issue – November 21st

COVER DRAWING

Oides dorsosignata by Lois Hughes

PRESIDENT'S POSTING

Wishing you a Merry Christmas and a prosperous New Year, or Season's Greetings depending on what you celebrate.

Our 39th issue is packed full as usual, with quite a variety of different topics. This will be our third issue in a row where we have featured the "other invertebrates" part of our aims more prominently.

The broader area of our aims will also feature in our work for the forthcoming year. We have been successful in our funding application to Brisbane City Council to conduct a "Bug-Eyed" Sponsorship program in schools. The funding applies to schools in the Brisbane Local Authority area, but is available more widely. Please see the item in this issue for further details. We are looking for teachers who are interested in working with us to make the program possible.

Thanks to those who responded to the call for a database developer. David Johnston has undertaken this task and will progress this activity over the coming months. Also we look forward to the CD of back issues being developed by Bob James. Our aim is to have this available after issue #40.

Helen Schwencke

IN THIS ISSUE

Creature Feature - Raising a Leaf-chewing Beetle (*Oides dorsosignata*) 4
Plant Profile - *Cayrtia*....................5
Club Excursion Report - A visit to Lorna Johnston's Garden - a tribute 6
Australian Native Bees #4 - Logs, Boxes and other abodes 7
Observations of Copper Jewel larvae 9
Indigo Flash feeding on Tuckeroo flowers 11
Excursion to Nudgee Beach with Australian Marine Conservation Society 12
Projects - Butterflies and Other Bugs in Brisbane and Bug-eyed....................13
Marvellous Marine Molluscs 15
Hairy Abortions 18
You Asked - Butterfly egg eating spiders....................20
World Wide Websites to Watch 21
Back Issues available 21
B.O.I.C. Programme 21

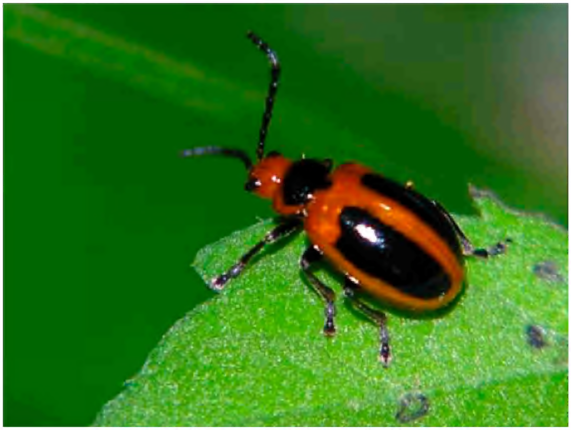
Raising a Leaf-chewing Beetle, *Oides dorsosignata* (Clark)

Undertaking a pastime that I love doing wherever I go, namely searching plants that show chew marks, I inspected a Slender Grape (*Cayratia clematidea*) at the Woodford Folk Festival site, during the regular monthly working bee, this one held in March this year. I was particularly trying to find young larvae of the Joseph's Coat Moth (*Agarista agricola*). To my surprise I found some entirely different grubs. They were creamy-yellow with brownish speckles, short and stubby, with 6 front legs. I found three of the creatures and my curiosity was piqued. Unfortunately I was unable to take a clear photo.

Eager to expand my knowledge about host plants for a range of different invertebrates, and the life habits of different types of larvae, I decided to take them home and to try to raise them in a container. They proved very slow growing and had a habit of soiling the food they were eating with black spots and streaks. They were intermittent feeders, going for days without touching the leaves provided.

Two months later one larva eventually pupated. This happened after about two weeks of the grub walking around the container or remaining curled in the tissue I had used to line the container. The second one died before pupating and the third one had simply disappeared early on in the piece. Not knowing the behaviour of the creatures, with hindsight, it may have been useful to provide a little leaf litter for the larva to pupate in. Again I was unable to obtain a photo of the yellowish pupa, by now clearly a beetle.

After approximately one month as a pupa a yellow beetle emerged that was about one centimeter in length. Over the next few days it coloured up to a bright orange and black. I continued to keep it since it seemed happy eating Slender Grape. At the end of July, Geoff Montieth from the Queensland Museum gave his presentation on beetles to the Club, and I took it along for identification. Shortly afterwards I released the beetle back at the Woodford Folk Festival site during the



Oides dorsosignata Photo by Peter Hendry

July working bee.

Geoff provided the following information: “That … little beetle you raised to adulthood is *Oides dorsosignata* (Clark) which is in the Subfamily Galerucinae of the Family Chrysomelidae. That subfamily often has larvae that live in the soil and feed on roots rather than on the leaves so it is quite nice to confirm that it has free-living leaf-feeding grubs. … Chris Burwell (also with the Queensland Museum) is interested in the egg-parasitic wasps of that group of beetles. He has never seen the eggs of that species and would be quite interested to know the details if you ever come across them yourself.” (pers comm. 3.8.05)

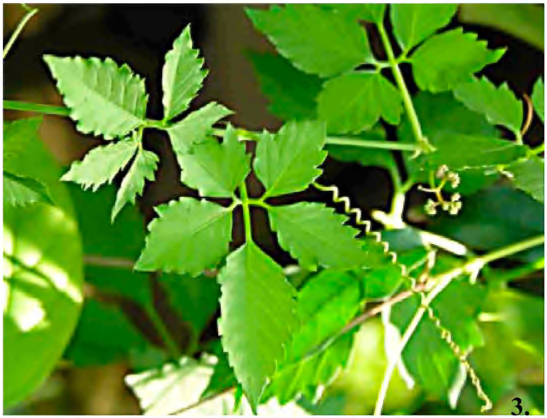
If I get a chance to repeat this exercise I will try to raise them on a live potted plant brought inside and kept in an enclosure to see if this allows the larvae to develop more quickly.

Helen Schwencke

PLANT PROFILE

Cayratia clematidea

Cayratia (cay-RAY-sha from an Indian name), *clematidea* (clematis - a climbing vine): *C. clematidea*, from the Vitaceae family of plants, is a slender vine with compound leaves, which have soft hairs. A flower or tendril opposes each leaf. The leaflets are serrated; the small greenish-white flowers with four petals are arranged in a cluster on a long stalk (peduncle), about equal in length to the leaves. The fruit is a berry about 6mm in diameter. *C. clematidea* forms tubers under the ground from which it regenerates each spring and regresses in autumn.



Cayratia clematidea - Photo by Peter Hendry

Besides being the host plant for our creature feature *Oides dorsosignata*, it also hosts several moth species, which include several hawk moths and *Agarista agricola*, the beautiful day-flying Joseph’s Coat Moth.

Peter Hendry

Excursion Saturday 15th October, 2005: A tribute to Lorna Johnston

Crystal Waters Park (Redlands Shire), dominated by a large lake, was our first interesting meeting place, where water fowl and their babies abounded in this delightful bushland setting. What had been a hot, sunny morning slowly turned grey and windy as we proceeded to Lorna's garden nearby. Sheltered from the wind, Lorna's was quiet and tranquil and many plants and insects provided interesting viewing.

Trees laden with nectar rich flowers flourished alongside host plants and interesting spiders tucked themselves secretively amongst the foliage while a nest of rattle-pod ants appeared, at our intrusion, to investigate. One spectacular tree was heavy with nectar rich, white flowers (a Lillypilly, David thought) while a weeping Callistemon was alive with beetles and other insects on the overwhelming abundance of pale pink blossoms.

Spirited discussion finally concluded that the small flighty butterflies we saw were an Indigo Flash (*Rapala varuna*) and a Large Purple Line-blue (*Nacaduba berenice*), after they settled long enough and close enough for identification.

Lots of Bright Cornelian (*Deudorix diovis*) butterflies were flying around the Tulipwood (*Harpulia pendula*), another interesting tree with its orange fruit capsules and black seeds inside which the larvae feed.

A Symmomus Skipper (now known as Splendid Ochre) (*Trapezites symmomus*) was seen winging it through the shrubbery and a large specimen of one of its foodplants, *Lomandra longifolia,* flourished nearby.

On the leaves of the *Eupomatia laurina*, an interesting tree with sweetly perfumed flowers, we found the shelters of the Eastern Dusk-flat (*Chaetocneme beata*). The early instar larva cuts out a small section of leaf, but without completely severing it so that it remains alive, then folds the piece over and secures it to the leaf with silk. It hides inside, emerging at night to feed. Unfortunately these shelters were empty.

An industrious Blue-banded bee (*Amegilla* sp.) was working amongst the flowers and a Magpie Moth (*Nyctemera amica*) was startled into flight as we moved around the garden.

The butterfly enclosure overflowed with a profusion of plants, the brilliantly coloured orchids being particularly stunning. Seeing the *Aristolochia* sp. aff. *pubera,* I recalled an amusing incident Lorna and I had at David's Mt. Cotton property. Lorna's garden, in its infancy was the source of a number of the plants I illustrated on our Club's Swallowtail Poster. Being completely ignorant then of all but two of the ten plants we illustrated, Lorna and her garden were a rich source of practical information. In the native grasses at David's property we searched for the small *Aristolochia*, host plant for the Clearwing Swallowtail (*Cressida cressida*), but found only one very small specimen. It was covered in orange eggs, so I had no option but to sit on the ground and sketch it there. Stretched out on a lie-low Lorna was startled by my yell as a snake slithered under my leg. In her usual unflustered manner (and safe on her perch) she just said "Its gone now, don't, worry, it knew you weren't a threat, it was just checking you out." We laughed about it later but I'm glad I had jeans on and not shorts! David kindly gave me a potted *Aristolochia* plant which is now flourishing in my garden, a reminder of our happy times.

To view the garden, one last time, from beneath the now towering trees without Lorna was both sad but also uplifting. I was reminded of the words of a song "from little things big things grow". She dreamed big dreams and planted the "seeds" and watched her garden grow and many have benefited, both people and wildlife. Most of us dream but we don't all plant. I am grateful for the things she imparted to me and because of her, I am watching "my garden" grow also.

Our day ended at the Alexandra Hills Park with us all shivering in the cold wind as we shared our afternoon tea, too cold to explore this venue. The butterflies were all sensibly tucked away for the day, as we soon were, after an interesting afternoon.

Thank you David for opening your garden and your heart to us, we appreciate it greatly.

Lois Hughes

AUSTRALIAN NATIVE BEES #4

Logs, Boxes and Other Abodes

In this article we will continue to explore the lifestyle of some of our stingless bees by looking at their preferred home sites. We will also examine the development of artificial hives by the pioneers of stingless beekeeping in their attempts to better manage and propagate these fascinating insects.

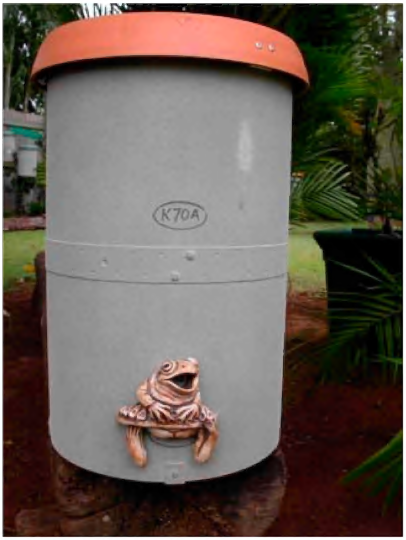
The favourite abode for most species of our stingless bees is a hollow tree, be it living or dead. However, they are not all that finicky and particularly in suburbia, where hollow trees are in short supply, have adapted their hive building technique to utilize any suitable cavity. This includes spaces inside brick or concrete block walls and small service pits or boxes for electricity, water and telephone. Then there are those with more bizarre or macabre tastes in housing, choosing square steel house posts, disused garden incinerators, tyres on old wheels and even hollow tombstones for their residential address. Few of these alternatives offer all the facilities provided by the

hollow tree, but nevertheless nests have been known to survive and even thrive in some of these locations.
Hollow trees not only offer protection from wind and rain, but usually also provide good insulation against temperature extremes. This is important; our stingless bees are not as efficient in maintaining a constant hive temperature as their introduced rival, the European honeybee. It is this aspect, together with the fact that they won't (or can't) fly off on foraging missions until the thermometer reads about 18 degrees centigrade that limits the range of our stingless bees mainly to the tropical, sub-tropical and warmer temperate areas of Australia.

Quite often the cavity in a tree occupied by the bees was originally formed by termites. Despite what we may think of these other social insects in terms of their destructive effects on our own dwellings they are, nonetheless, the recyclers and perhaps ironically, the homebuilders of the Australian bush. A large number of our birds, small mammals and reptiles as well as our bees utilize the hollows created by these little wood munchers. Our stingless bees usually look for a cavity with a suitable entrance size. Here again the termites oblige by tunnelling to the outside world to provide a passageway for the winged members of their colony to engage in mating flights. This tunnel can later provide an entrance narrow enough to be easily defended, especially by the smaller less populous colonies of stingless bees such as *Austroplebeia australis.*

Presumably the stingless bees wait until well after the cavity has been abandoned by the termites before moving in and claiming vacant possession. However, it is not at all unusual to find a stingless bees nest abutting, or even surrounded by, a living termite colony. It is possible that in such cases the bees benefit from the warmth generated by the termites. Similarly they may benefit from any warmth generated by the microorganisms of decay also found within old tree hollows.

So for many of our stingless bee enthusiasts the easiest way to keep them is to cut out the section of log housing the nest and to bring it home and set it up in a corner of the garden. It may be necessary to put an old stump cap or something similar on top of the log to prevent the entry of rain and also to raise it off the ground a bit to deter the ants, but otherwise it's a pretty simple exercise. Furthermore, an



The author's insulated tubing hive design (KITH) fitted with a novelty entrance. Photo by John Klumpp old weathered hardwood log, tastefully positioned, can provide an attractive and durable garden feature.

However, for the real enthusiast with an enquiring mind or a scientific interest the natural log hive has limitations. These people have therefore developed artificial hives that incorporate features such as:

(a) A two-part hive design that allows propagation through splitting of the component parts;

(b) A glass observation panel whereby some of the internal hive behaviour can be observed; and

(c) Separate honey 'supers' which facilitate the extraction of tangy bush honey uncontaminated by pollen and brood material.

Currently there are numerous designs ranging from those that externally resemble small honeybee hives, through round tubing 'artificial logs' to more whimsical shapes such as quaint miniature cottages. Given that there has already been some commercialisation of our stingless bees for crop pollination and boutique honey production there is an argument for standardisation of the artificial hive design in much the same way that honeybee hives are now uniform. However, there is an opposing point of view suggesting that stingless beehive design is still developing and premature standardisation could preclude the introduction of further improvements. Besides, unlike honeybees that are kept almost exclusively for honey production our stingless bees are often kept for other reasons including conservation or just for the joy and interest of having them in the garden. Consequently a one-size fits all artificial hive design is probably unlikely to evolve.

Hive design is a particular interest of mine, so if our editor is prepared to continue to indulge me, we will continue to explore that aspect of stingless beekeeping in more detail in the new year. If space permits (and if these articles have created any enthusiasm in readers to obtain a hive of their own) we may also be able to cover what to look for when buying a hive and/or the process of transferring a wild colony from a log into an artificial hive.

Until then Season's Greetings to all. ***John Klumpp***

REPORTS

Observations of Copper Jewel Larvae

On July 9 2005, 2 larvae of the Copper Jewel (*Hypochrysops apelles*) were collected at Leanyer, an outer Darwin suburb. They were feeding on mangrove *Lumnitzera racemosa* with attendant ants, *Crematogaster*. (see photo p 27 Braby 2004)

On July 21, a third Copper Jewel larva was found when gathering fresh *Lumnitzera racemosa* leaves. This larva was fairly big and judged to be not far from pupating.

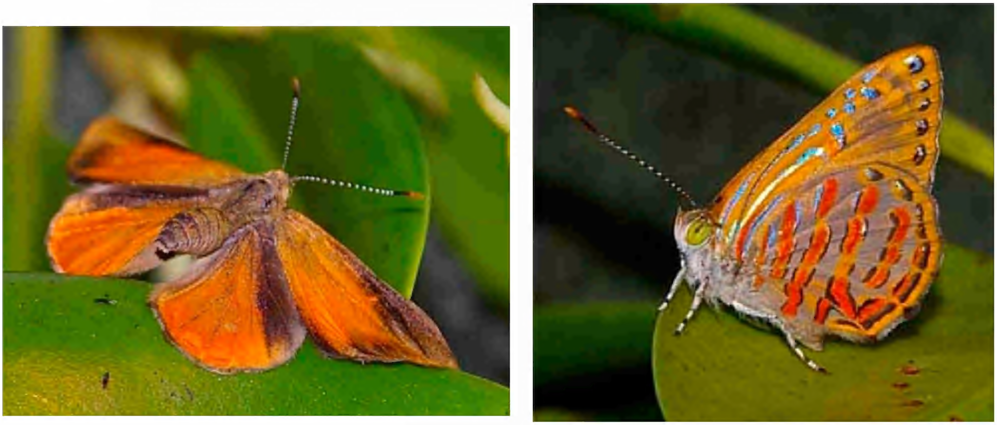
The larvae eat irregular patches on the surface of the leaves, leaving a skeletonised appearance, (Braby 2000). Some larvae were actively feeding with ants in attendance, while others had taken shelter between leaves that had been attached together with silk thread.

The larvae were kept in a box with fresh mangrove leaves added in the late afternoon as they tend to feed mainly at night.

On the morning of July 11, the bigger of the two larvae was missing but later found in a folded newspaper. This larva had changed from green to grey/brown or fawn. At the time, it was thought that the change in appearance may have been as a result of lack of food.

The follow day this larva stopped feeding and concealed itself (pupated) between two leaves by attaching a couple of cobweb like threads. (See table below)

The pupa turned brown and it looked like it was dead. Although 'pupa make a series of audible clicks (Valentine, 1984)', (Braby 2000), no audible sound was heard with the 3 specimens collected.



Copper Jewel (*Hypochrysops apelles*)
Photos by Don Franklin

After 14 days as a pupa, a beautiful adult emerged and was keenly photographed before releasing in the *Lumnitzera racemosa* area of Rapid Ck.

The second larva changed colour on the morning of July 24. It was found alongside pupa No. 1, but later in the day, it moved to where larva No. 3 had pupated the previous day.

However, on the morning of July 25 both pupae were found between separate leaves on the same bunch of leaves.

Fifteen days after pupating, the second beautiful adult Copper Jewel emerged. Larva No 3 changed colour and concealed itself between two leaves with cobweb like threads as the first one had done. After 15 days it emerged as an adult on August 7.

Larvae #	Date of pupation	Date emerged	No of days
1.	12/7/2005	25/7/2005	14
2.	25/7/2005	8/8/2005	15
3.	23/7/2005	7/8/2005	16

References

Braby, MF (2000) Butterflies of Australia: Their Identification, Biology, and Distribution. CSIRO Publishing, Melbourne.
Braby, MF (2004) The Complete Field Guide To Butterflies of Australia, CSIRO Publishing, Melbourne.

Sheryl Keates

Ed.: I wish you could all see the wonderful colour photos I am inserting in this newsletter and, indeed, in previous ones. Actually you will be able to if you purchase our forthcoming CD containing all of our back issues.

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Indigo Flash feeding on Tuckeroo flowers

At the Butterfly Revegetation weekend at the Woodford Folk Festival site in late April, new Club member Tracie and I observed a large number of different small blue butterflies paying very close attention to a row of flowering Tuckeroos (*Cupaniopsis anacardioides*). We spent a deal of time examining the profusion of new flower spikes and found eggs and a number of larvae on them. Some trees were preferred over others. One larva in particular had intrigued me. It resembled two unopened flower buds with a constricted middle. Unfortunately, this larva didn't survive to become an adult, so I'll look for it again next year.

After an extensive search for more of the larvae mentioned above on all of the trees in the row, one tree, yielded several nearly fully grown larvae of the Indigo Flash (*Rapala varuna*). A further thorough search didn't reveal more larvae. Tracie took the larvae to her home nearby to raise. She reported that every time she went out to find more food for the larvae she found even more Indigo Flash larvae. About three weeks after finding the original larvae an adult emerged.

Helen Schwencke

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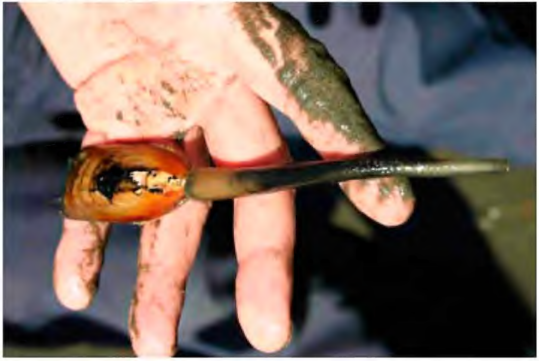
Jennifer Singfield, President of the Australian Marine Conservation Society, recently invited our Club to join her on a two day workshop led by Sean Galvin who is the Regional Coastcare Facilitator for SEQ.

On the first morning at low tide, we surveyed snail populations near the Shorncliffe Pier. Our task was to record our findings and so to do this, we had to learn to identify each of the species found. It was here we discovered our first Yellow-striped Hermit Crab (*Clibanarius taeniatus*) with beautiful yellow longitudinal stripes on its legs, claws and upper body. I also found some Fragile Lace Coral (*Beania magellanica*) while sneaking a careful peep under a small rock.

On the second morning, we explored the many creatures found in a pool on the mangrove flats at Nudgee Beach. We found many more hermit crabs. This time it was the common species. I found an interesting shell. I first thought it was a bi-valve, but it was later identified as part of a brachiopod called a Lamp Shell (*Lingula anatina*). This is known as one of our "Living fossils" as there was a similar species in the Ordovician Period 350million years ago. They live below the surface of wet sand, burrowing upwards and downwards using a powerful digging muscle that contracts and expands and looks like a tail. Only the tip of the shell is exposed as they feed. They are filter feeders and leave a slit-shaped opening in the sand when they return to their burrow.


Lamp Shell – Photo by Janet Willoughby

The highlight of the morning was undoubtedly when Sean uncovered a live specimen of the Lamp Shell which I was able to photograph before it was carefully replaced. There are three species of Lamp Shell found in Moreton Bay and they are apparently all very similar in appearance.

In the pool we also found two 2cm Nudibranchs, but we were unable to determine the species.

Green Paddle Worms (*Phyllodoce novaehollandiae*) were encounted on the muddy sand flats as well as many of the fast moving Soldier Crabs (*Mictyris* *longicarpus*) which we observed burrowing in a corkscrew - like fashion into the wet sand. Unlike other crabs, these crabs are able to walk forwards.

Jenny has promised to invite our club to join her for further workshops.

Janet Willoughby

PROJECTS

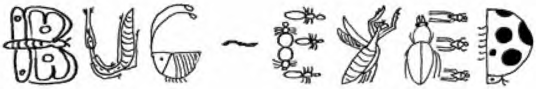
Butterflies & Other Bugs in Brisbane : A community education project

2006 will be a good year for community education activity about butterflies and other invertebrates. Brisbane City Council has funded a school-based sponsorship program called "Bug-eyed". See project information following. Council has also funded a community education project, to be conducted by Community Learning Initiatives (of which I am the Hon Secretary / Director), which is a not-for-profit adult education organisation.

The project involves running workshops and field trips about a number of different invertebrates groups, butterflies, native bees, etc. in four Wards in Brisbane. The Wards are Jamboree, The Gap, Marchant and Wishart. The project will be conducted in collaboration with the Butterfly & Other Invertebrates Club. Daphne has kindly offered in-kind support to help with the workshop registration process. Watch this space for further information about the forthcoming program.

Our sincere thanks to Brisbane City Council for the grant to enable us to undertake these projects.

Helen Schwencke



Bug Eyed : a sponsorship program

proudly funded by

BRISBANE CITY

Dedicated to a better Brisbane

Bug Eyed is a sponsored insect watching activity to get children observing and inspired by nature. To give an example: A pilot of the program was conducted at Pullenvale State School in December 2004 Students from grades 4 to 7 were invited to take part. The proceeds raised were shared between the purchase of butterfly attracting plants for the school and a donation to the *Butterfly and Other Invertebrates Club Inc*. The Student that raised the most money won a free ticket to 'Wet'n'Wild' on the Gold Coast! (though other prizes are also conceivable).

Aims of the project include:

1. To inspire Children about nature
2. To get Children to observe the animals which are all around them
3. To raise money for butterfly-attracting plants for the school grounds
4. As a possible project and legacy for a Grade 7 environmental committee
5. To involve school students in the wider community
6. To engage students with active and informed citizenship approach
7. To help fundraise for the Butterfly and Other Invertebrates Club to help this non-profit, unfunded community group make this and other projects sustainable so that information and resources can be made available to other schools once the current funding has run out.

How it works:

- Each participant is provided with an *Insect Group Identification Sheet*. This sheet gives a picture and brief description of the characteristics of the insects within each broad insect group. The broad insect groups include butterflies, moths, beetles, bugs, cockroaches, cicadas, aphids, mayflies, dragonflies, bees, wasps, flies, grasshoppers, praying mantids, stick insects and ants.
- Participating students are asked to get people to sponsor them for the number of broad insect groups they see over the nominated time period, for example, a weekend.
- Participants can carry out the activity wherever they are during the nominated time (eg. at their own home, at the home of friends or family, camping etc.). The idea is that they notice the 'everyday' insects that are all around them.
- The Student that raises the most money wins a prize to be determined.
- Participating schools are provided with support from the Butterfly & Other Invertebrates Club in the form of
  - (in the Brisbane area) someone who can give the children some information, possibly as part of a Parade activity, and who can make presentations, if required
  - a full set of information to be able to conduct the program
  - advice on appropriate plants for a school butterfly garden, if required

- a range of information booklets for the school library on various aspects of butterflies and butterfly gardening that can be used by teachers and other staff
- a poster on the lifecycles of local Swallowtail butterflies and a poster on Dragonflies

When: at a time of your school's choosing, during 2006.

This project has been funded by Brisbane City Council, and is, in its initial phases, targeted at schools in the Brisbane Local Authority area. Any school, however, is welcome to express an interest in the program.

Full details of the program and associated materials are available from the Butterfly & Other Invertebrates Club,
contact Daphne Bowden, e: bowden@itconnect.net.au, or phone 3396 6334

The program was designed by Amanda Grimmett.

About the *Butterfly and Other Invertebrate Club*:
The Butterfly and Other Invertebrates Club is a largely South-East Queensland based club though it has members Australia wide. We provide an organisation for people with an interest in butterflies along with other insects and small creatures which is educational, enjoyable and which allows for a diversity of interests. We seek to increase awareness about butterflies and other invertebrates and produce books and posters regarding butterfly plant species, how to create a butterfly garden, the life cycles of butterflies etc. To learn more about the club, visit **http://www.connectqld.org.au/boic**

ITEMS OF INTEREST

Marvellous Marine Molluscs

(Robert Ellis has been collecting shells since 1960, mainly in Queensland. He is a member of The Cairns Shell Club, The Keppel Bay Shell Club, The Townsville Shell Club, and The Malacological Society of Australasia (Queensland Branch) (MSA), of which he is secretary.)

What is a mollusc? Molluscs belong to the Phylum Mollusca, which is second only in the numbers of species to Phylum Arthropoda. They are divided into classes, with **Bivalves** (scallops, mussels and cockles), **Gastropods** (whelks, snails, cones, cowries and volutes), and **Cephalopods** (squid and nautilus) being the main groups. Nudibranchs have no shell, and are gastropods.

Where do molluscs live? They live in a range of aquatic and terrestrial environments. This article will focus on those in the sea. There is an extensive fossil history of molluscs, which have out-survived many other animals throughout geologic time. Shells can be found under rocks and coral, in sand and mud, on seaweed. They are generally more active at night-time. Very few shells live in live coral. Most shells live in places tourists would not find pretty or exciting, and the majority live in zones generally inaccessible to humans.

Growth. Shells can develop from eggs laid free in the water or attached to a substrate, or can be live hatched. Those which have a free-floating stage generally, are much more widely distributed. There are some which are found in all oceans of the world. Direct developers are more restricted in their locality, and generally have smaller gene pools. For the same species, there can be variations between unconnected groups only short distances away. An example of this is where the same species lives on individual reefs, where they can't move between the reefs because of the depth.

From the early stages of development, the mollusc increases with size, and follow a variety of growth patterns. Gastropods tend to form spirals, with different radii and pitch of the axis. Superimposed on these simple mathematical figures are ornamentations such as ribs, scales, fronds and spines. The surface may be coloured or plain. The colours may form patterns. In many species, it is not known exactly what the patterns represent, but may just be interference pattern between different wave forms laid down by the mantle.

What is the shell made of? Most molluscs have a shell made of calcium carbonate crystals interspersed with proteins which give extra strength. The structure is like a microscopic version of reinforced concrete. The shell is deposited by a chemical reaction in an organ called the mantle, which causes calcite to precipitate out of the seawater.

What do molluscs eat? Molluscs eat a range of food, but the type is usually specific to the species. Molluscs may graze on algae, bacterial mats, sponges, or eat worms, crabs, fish and other small animals. The carnivorous cone shells actually shoot their prey with a hypodermic harpoon containing extremely poisonous venom. The aim is to kill the fish, crab, or other mollusc quickly, so it can capture the prey before a competitor can take unfair advantage. Some of these cone shells can kill humans, so beware!

How big do they get? Mature shells range in size from microscopic to about one and a half metres for the largest gastropod, *Syrinx aruanus*, and the largest bivalve, the giant clam, *Tridacna gigas.* Shells generally reach maturity in one or two years. Some just keep on growing, getting bigger with age, whereas the cowries reach maturity and just get older. The oldest accurately recorded mollusc was a giant clam, over one hundred years old.

Why collect shells? Apart for hobby collecting, shells can be collected for a number of reasons. The prime one has always for food, in which the soft part is cooked or eaten raw. However, many of the discarded shells have been used for other purposes such as currency, jewellery and implements. Those favoured for food include those commonly known as scallops, oysters, mussels, squid, trochus, eugaries, cockles, pipis, periwinkles and clams. Many of these are now farmed or trawled commercially. Some are dug, such as the clams and cockles in Europe and US. Many of the shells seen in markets or souvenir shops have actually been eaten first, so they are a by-product of food production, and there is not as much of an environmental problem as may at first appear.

What are molluscs used for? The ultimate mollusc product is the pearl, found in the marine pearl shell, as well as in freshwater mussels and occasionally in other shells. This is the shell's way of getting rid of an annoying particle such as sand. In cultured pearls, a "seed" is deliberately placed in the shell, which coats the particle with the same material as the shell, with the numerous layers giving the pearly lustre. Prior to plastic, shells were used for handles, combs, trinket boxes and a number of other items. Royal purple dye was obtained from *Murex brandaris*, which was collected and farmed in ancient times.

Scientific research. Research into molluscs can help to make harvesting of economic species sustainable. For example, in oyster farming, there are many molluscs that become pests if they become too numerous and start eating into the profit. Understanding the interactions between the species may solve some of the problems.

There has been extensive research into medical uses of various parts of the mollusc. The oldest in use is a derivative from a cone shell venom (a group of proteins) which has been used to treat angina for many decades. Current research into these toxins has come up with a whole range of interesting developments, especially in pain treatment and cancer research.

Conservation. In Queensland, there is much legislation dealing with the sustainable collection of mainly commercial species. The Great Barrier Reef Marine Park Authority, Environmental Protection Agency, Department of Primary Industries and Fisheries, and the Australian Department of Environment and Heritage are involved. Much of the legislation for hobby shell collectors is based on very limited data. However, the MSA members are working with the authorities to advise them of information that may be useful in conservation.Many collectors belong to the few shell clubs around the state, or Malacological Society of Australasia, which is the lead professional/amateur group. Responsible hobby collectors disturb as little as possible and always turn back rocks or coral after looking underneath.

Collecting shells as a hobby. Collecting shells as a hobby has been a favourite pastime for many centuries. The early European trading ships used to bring back interesting finds from exotic places, particularly the tropic seas. Only rich people could afford this as a hobby in those days, but eventually with the globe being more accessible to travellers, the ordinary person could get into shell collecting.

The main collection methods these days are either personally or remotely. Personally involves the actual collector who finds his own shells by diving, snorkelling, reef walking, or beach combing. Remote methods are by trawling or dredging, exchange or purchase from dealers or other collectors.

In Queensland, one of the prime areas to go shelling is the Great Barrier Reef, which is only accessible by boat. Many of the coastal areas are now off-limit to collecting, and bag limits apply to anyone collecting shells for any non-commercial use. The number of collectors in the state is very insignificant when compared with the amateur fishermen, and the actual biomass collected each year is minor. Most shell collectors would eat more commercially collected molluscs than they would collect for their collections.

When collecting shells, safety is critical. Suitable clothes are needed to prevent injury while collecting. Some of the hazards to be aware of if you decide to go shell collecting are:- sunburn, coral cuts, tides ,currents, stonefish , cone shells, sharks , stingrays, sea urchins, sea snakes, moray eels, octopus, jellyfish, stinging coral, bends, boats, bristle worms, sea anemones, and starfish.

To properly curate a collection, all shells need to be cleaned correctly, labelled and stored in some logical manner. The value of shells in many cases is in the eye of the beholder. For example, a common shell found well outside its known range may have a high personal value, but it still won't be worth any more to anyone else. To increase the variety in a shell collection, many collectors engage in swapping with like-minded people around the world. Some collectors become fanatics, specialising in a very small facet of the molluscan fauna. Some shell clubs have regular shell shows, where activities involve display, competition, selling and swapping shells. These are a great way to keep up with all the accomplices in the shell collecting fraternity.

There have been many shelling publications printed over the years. There are many malacological societies and shell clubs throughout the world which publish journals and newsletters. As well there are many publications for the identification of shells, both professional and amateur. There are several good books dealing with the identification of Australian shells.

Robert Ellis

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Hairy Abortions

An unusual number of abortions in horses at various horse studs around Scone in New South Wales has prompted an investigation with surprising suspicions: while poisonous weeds were first suspected, the culprits may instead be some hairy caterpillars. The Lepidoptera species involved appear to be *Leptocneria reducta,* LYMANTRIIDAE (White Cedar Moth) and *Ochrogaster lunifer*, NOTODONTIDAE (Processionary Caterpillar). Both of these species have dark hairy caterpillars that are inclined to go walkabout, which probably accounts for their setae (hairs) being spread over the pastures on which the horses graze.

One suggestion is that it is not the actual species of caterpillar that matters, but the fact that the caterpillars have long, irritating setae. The same problem has been encountered in USA with *Malacosoma americanum*, LASIOCAMPIDAE (Eastern Tent Caterpillar).

The latest from Kentucky MRLS investigations is that the setae of the caterpillars have some toxic property, but that they lose this ability to cause abortion if they are autoclaved. So the theory there is that the setae penetrate skin of mucous membranes in the horse mouths and introduce bacteria into the mare's blood stream that then lead to the amnionitis, and then abortion.

The Australian cases appear somewhat different from those in USA. Here, there appears to be some chemical toxin in the hairs of the larvae of some Lepidoptera species, but much more research is need to investigate these suggestions.

Anyone with a White Cedar tree (*Melia azedarach*, MELIACEAE) near their home will be familiar with the larvae of *Leptocneria reducta.* Typically they rest by day in a nest near the base of the tree and climb up and feed on the foliage at night, returning to their nest at dawn. The nest is a mess of silk, frass, and hairy skins, discarded during the various moults as the caterpillars grow. When the tree is totally defoliated, the larvae go walkabout to find another White Cedar tree, and optimistically invade gardens, garages, cars, and homes, looking for their favorite tree. Those that do not find one die of starvation and so their setae get spread everywhere.

Ochrogaster lunifer has a similar behaviour, but in their case, they go walkabout anyway at maturity to seek some nice nook or crevice in which to pupate. They are however more orderly than *L. reducta,* and travel in procession, one behind the other, like a minature freight train.

The hairs of these and many other hairy caterpillars from the families ANTHELIDAE and LYMANTRIIDAE have been known for many years to cause Urticaria in humans with sensitive skin. Curiously, there have been little trouble from the hairy caterpillars of species in ARCTIIDAE. Nevertheless, it is always wise to avoid direct handling of any hairy caterpillar.They can be moved most easily without injury to you or them by putting a leaf or bit of paper in front of them, and then tickling their bum with a twig.

Meanwhile around Scone, there is a problem of controlling the populations of the species involved. Wrapping some coarse sacking around the trunk of a food tree is good for *L. reducta,* as the larvae will hide in it, and it can then be removed and disposed of. This is good for some populations of *O. lunifer* that nest at the foot of a food tree. However some make a nest high in the branches of tall gum trees.

Suitable control methods for the larvae are unclear. Suggestions range from shooting flaming arrows into the nests, to putting out nesting boxes to encourage mothivorous bats.

Anyone with other ideas for control measures is encouraged to contact the authors. We really have a serious and expensive problem.

Don Herbison-Evans **and** ***Debbie Racklyeft***

Further reading:

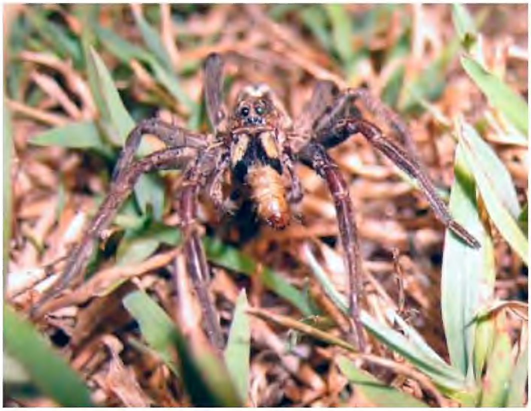
Nigel Perkins, "Equine Amnionitis and Foetal Loss (EAFL)"
Final report to Hunter Valley Equine Research Centre (HVERC), March 2005.

YOU ASKED

I wanted to know what type of spiders eat butterfly eggs or butterflies. ***Paula***

A

The only known spider which feeds on butterflies on the wing is *Thomisus spectabilis* - the White or Yellow Crab Spider. The spider waits on its respective coloured flower and seizes any butterfly which visits. Any spider which traps a butterfly in its web will feed on it. The only known spider to feed on butterfly eggs is *Cheiracanthium* sp. (see Katie Hiller's article following).



Venatrix eating caterpillar
Photo supplied by R. Raven, Qld.Museum

Caterpillars will be fed on by hunting spiders: those on the ground will be taken by the ground hunting spiders, esp. Wolf spiders, family Lycosidae (see photo), whereas those in vegetation are taken by Lynx spiders, *Oxyopes* spp. No spiders are known to feed on pupae.

Observations of the Sac Spider (*Cheiracanthium* sp.: Clubionidae) in butterfly enclosures at Mount Glorious Biological Centre - By Katie Hiller

Queensland Museum, P.O. Box 3300, South Brisbane, Queensland 4101 reprinted (with permission) from Australian Arachnology Number 48: August 1994

The female *Cheiracanthium* was first collected in the first fortnight of October (date uncertain). It was found sheltering in a silken sac under a leaf of native *Psoralea* sp. in a butterfly cage at the Mount Glorious Biological Centre. Several freshly laid eggs of *Papilio demoleus* on this plant were empty and no hatchling larvae could be found. Uneaten eggs were also present on foliage.

The spider was collected in a small container and offered 6-8 infertile eggs of the Orchard Butterfly, *Papilio aegeus*, to determine whether it was larval movement within the egg that triggered feeding. All these eggs were empty within 2 days, proving the spider ate eggs without larvae in them.

The spider was then given 20-30+ fertile eggs and several hatchling larvae of several Citrus feeding butterflies: *Papilio aegeus, Papilio ambrax* and *Papilio fuscus*. By the following day all larvae were eaten and a large percentage of the eggs emptied.

Another, larger individual of this spider was found in the first week of October under a Citrus leaf where its presence was a betrayed by the disappearance of larvae, eaten out eggshells, and several dead sucked out larvae left on leaves. Some of these dead larvae were at least second instar larvae (i.e. 1.5 cm in length). This spider was destroyed without consideration of its possible future value to scientific knowledge.

WORLD WIDE WEBSITES TO WATCH

http://www.ento.csiro.au/aicn/index.htm - This site is a database of Australian Insect Common and Scientific Names. Some great photos also.

BACK ISSUES

Back Issues of the Club Newsletter are available at a cost of $2 each plus postage (1-2 copies $1.10 - 3-6 copies $1.50).

BUTTERFLY AND OTHER INVERTEBRATES CLUB PROGRAMME

Excursion to a Highvale(Samford) garden

When: On Saturday 10th December, from 11am onwards
Where: At the home of Bob and Barbara Luttrell, 12 Endwood Court Highvale
What: A barbecue (bring your own barbecue meat and drinks, we supply the barbecue). A walk in the garden spotting bees, inspecting the retrieved collection of stingless bees in logs and boxes, viewing some of the photographs I have taken of bees and other subjects, lots of talk about bees,

butterflies and whatever other invertebrate takes your fancy. Most of all it is a chance for the members of the native bee group (ANBees) to meet others with similar interests, and put faces to the emails.

Our Place: We have an acre in our block, and are developing a garden over pretty much the whole area. We have been here since March 2004, and have converted the yard from almost totally mowed with a few boundary line shrubs, to predominantly mulched garden beds with emphasis on rainforest species, with exotics concentrated in one corner, plus a mixture of bush tucker plants and fruit trees as well as a vege garden. Catching all water from our roof area to provide for the garden.

Bring: Your own meat and drinks, a chair just in case. A plate of salad to share. I will provide a chocolate pavlova and New York cheesecake for dessert)

Contact: . Bob and Barbara Luttrell on 3289 5553 or by email on robertb.luttrell@bigpond.com. Some indication of numbers is appreciated.

Woodford Folk Festival, Butterfly Information Stall & Daily Walks

When: 27th December, 2005 to 1st January, 2006

What: Helen & Frank will hold a Butterfly information stall on the Butterfly Walk. This walkway leads up to the entrance to the folk festival main entrance from the ticket sales tent. This will be the second year of the Club's involvement with this event.

A **special feature** of this event will be a **Butterfly Walk starting 8am** on the mornings of the 28th, 29th, 30th & 31st December, starting from the General Store. This walk is outside the Festival itself. Also we will be conducting **Light trapping** on 3 evenings,

Where: Woodford Folk Festival site, Woodrow Rd, Woodford (2003 UBD Brisbane Map 33, Ref C13)

Contact: Helen 3844 6677, email: hschwenc@dovenetq.net.au

Great Dividing Range Excursion

When: Sunday, 15th January, 2006, meeting at Aratula, 9am to after dark

Where: The outing will comprise visiting a number of interesting butterfly sites behind the Great Dividing Range between Cunningham's Gap and Teviot Gap. These will include Mt Colliery and Queen Mary Falls

What: We will be making a round trip with the intention of reaching Teviot's Gap at Sunset to watch early dusk settle over the Coastal plains. We intend to reach the bottom of the range before dark to allow for good visibility on the winding road coming down.

Bring: Morning tea, lunch, afternoon tea, snacks (to share if you like)

RSVP essential: Contact Helen, 3844 6677 or email: hschwenc@dovenetq.net.au, at least 24 hours beforehand. Please provide your normal and a mobile phone no.

Planning and Management Meeting

What: Our planning meetings are informative and interesting. As well as planning our activities we share lots of information. All members are welcome. This planning meeting will be discussing revisions to the constitution to be put to the AGM.

When: Wednesday, 1st February 2006, 6.30 – 9.00pm

Where: to be advised upon RSVP
Contact: Daphne 07 3396 6334 or email bowden@itconnect.net.au to RSVP or for more details

Maleny: Barung Landcare Nursery & Rainforest Liqueurs / Mary River Excursion

When: Sat 18th February, 2006, starting 10.00am to 5.00pm or later

What: Meeting at Barung Landcare Nursery, 17 Bicentenary Lane, Maleny (ph 5494 3151), (2003 UBD Sunshine Coast Map 74 Ref E18) to purchase any hard to get plants they may have available (see http://barunglandcare.com.au/nursery.html for more information). From here we will have an early lunch in Maleny before moving to John & Mary King's property at 272 Ahern Rd Conondale. phone 07 5435 0074. The activity will include a walk through Bunya Pine forest along the Mary River led by John & Mary, followed by a Rainforest Liqueur tasting ($5 per head). Anyone purchasing liquers (150ml bottles are $11 ex cellar door) will have their purchase discounted by the entry price. On the return journey people may stop at Mary Cairncross Park.

Directions to Rainforest Liqueurs: from Maleny take Maleny-Kenilworth Road for about a half an hour. Turn left into Ahern Rd around a tin bus shed. If you get to Conondale you are one country block too far. 272 is on the right where the creek is very close to the road. If you go past a pale yellow shed you are one gate too far. We do not have a business sign there, only our name and no and a 'Land for Wildlife' sign at the mailbox. Once in our gate, follow the creek then cross it and go up the hill. Mobile phones stop working at Witta, nearest fixed phone is at Witta service station or opposite the shop at Conondale.

Bring: Morning tea, lunch, afternoon tea, snacks (to share if you like)

RSVP essential: Contact Helen, 3844 6677 or email: hschwenc@dovenetq.net.au, at least 24 hours beforehand so I can advise the hosts of numbers. Please provide your normal and a mobile phone no.

Gold Coast Excursion

When: Sun 19th March, 2006 from 10am – mid afternoon

What: Meeting at Burleigh Heads National Park (UBD Gold Coast Map 60 ref G9) From here we will be visiting a number of spots inland along the Gold Coast to be led by Doug White of ddwfauna (for more information visit: www.ddwfauna.com.au)

Bring: Morning tea, lunch, afternoon tea, drinks, snacks (to share if you like), hat, sunscreen, insect repellent

RSVP essential: Contact Helen, 3844 6677 or email: hschwenc@dovenetq.net.au, at least 24 hours beforehand

Preliminary notice for Annual General Meeting

When: Saturday, 15th April, 2006
Where: to be advised in the next newsletter
Contact: Daphne 07 3396 6334 or email bowden@itconnect.net.au to RSVP or for more details

If you plan to attend one of the above events, please contact the person indicated in case, for some unforeseen circumstance, the event has had to be postponed or cancelled.

DISCLAIMER

The Newsletter seeks to be as scientifically accurate as possible but the views, opinions and observations expressed are those of the authors. The Newsletter is a platform for people to express their views and observations. These are not necessarily those of the BOIC. If inaccuracies have inadvertently occurred and are brought to our attention we will seek to correct them in future editions. The Editor reserves the right to refuse to print any matter which is unsuitable, inappropriate or objectionable and to make nomenclature changes as appropriate.

ACKNOWLEDGMENTS

Producing this newsletter is done with the efforts of:

- Those members who have sent in letters and articles
- Lois Hughes who provides illustrations including the cover
- Daphne Bowden who works on layout, production and distribution
- John Moss, Martyn Robinson, Bach App Sci (Biol) and Dr Don Franklin for scientific referencing and proof reading of various articles
- Helen Schwencke who developed the overall design

We would like to thank all these people for their contribution.

ARE YOU A MEMBER

Please check your mailing label for the date your membership is due for renewal. If your membership is due, please renew as soon as possible.

Membership fees are $15.00 for individuals and $20.00 for families, schools and organizations.

Would you please advise bowden@itconnect.net.au if you get/change an email address.

Butterfly and Other Invertebrates Club Inc.
PO Box 2113
RUNCORN Q. 4113

Next Meeting: Excursion to a Highvale(Samford) garden on Saturday 10th December (see Programme for details)